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Attitudes of Macedonian High School Students towards the Environment

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Abstract

The objective of this study was to examine the attitudes of Macedonian high school students towards the environment. Attitudes reflect feelings of concern for the environment. They are mental states based on personal beliefs towards pollution, technology, interdependence and equal importance of all life forms, dependence of human life on the resources of a finite planet, power of human beings to modify the environment, conservation, environmental action etc. The survey was carried out in 18 cities and towns. Nearly 500 respondents were included. A 13-item, 5-point Likert – type scale instrument was used. Results suggest that concern for environmental issues is nearly 70% of its maximum. We must look at student's attitudes towards environment in context of the overall social-economic conditions in which we carry out the education process. A model that tries to incorporate all these factors can help to illuminate this complex field.

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Keywords: attitudes, environment, students, high schools, Republic of Macedonia;

1. Introduction

Problems related to the protection and improvement of the environment in Republic of Macedonia go back a long way. They are becoming more and more intensive with all the industrial development and urbanization. This is why one of the primary aims of formal education nowadays is promotion of environmental education (EE) as an effective way of improving the quality of our environment. The need for EE was recognized at the International Conference in Stockholm (1972). The organizations within the UN, especially UNESCO, as well as other international organizations, were recommended to take all the necessary measures and develop an international programme for EE. Since 1975, UNESCO and the United Nations Environment Programme (UNEP) have been implementing a programme which was the starting point for the International Conference held in Tbilisi (1977). The documents that

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were drawn up during this conference determined the role, the objectives and the principles of EE. The first international manifestation where opinions on EE were exchanged took place in Belgrade (1975) and was organized by UNESCO and UNEP. The Belgrade Charter (UNESCO-UNEP, 1976) and the Tbilisi Declaration (UNESCO, 1980) provided an internationally acceptable plan for EE (Srbinovski, 2004). There have been several definitions and interpretations of the term EE since then. The approach to defining the term EE differs from author to author and from institution to institution, which is partially due to the development of the notion and understanding of environmental science, as well as the conceptual frameworks and the aspects used as a starting point. To better apprehend the direction in which the understanding and the interpretation of the term EE are evolving, it is very important to determine the variations and differences that exist in that respect. Srbinovski (2004) conducted an analysis on a number of definitions of the term EE given by different authors and institutions (Stapp et al, 1969; IUCN, 1970; Environmental Education Act (P.L. 91-516); Americos, 1971; Stokholm, 1972; Jammi, 1974; Belgrade Charter, 1975; Wolsk, 1977; Goudswaard, 1977; Withrington, 1977, Tbilisi, 1977; UNESCO, 1977; Schmieder, 1977; Lucas, 1980; Education Report of the U.K.; WCED, 1987; Ramsey & Hungerford, 1989; Marcinkowski, Volk & Hungerford, 1990; Environmental Education an active approach, 1991/1992; De Jong, 1991; Environmental Education, Proceedings of the Seventh East-West Consultation, 1991; Ramsey, Hungerford & Volk, 1992; FCCSET, 1993; UNESCO, 1993, Wals, 1994; Huey-li, 1994; AAEE, 1994; Palmer & Neal, 1994; NC EE Plan, 1995; EE Advisory Council; North Carolina Department of Environment and Natural Resources; A national Society of Conservationists Publication, 1995; UNESCO, Athens, 1995; NEEAC & US-EPA, 1996; New Zealand Environment 2010 Startegy; Ministry of Science, Technology and the Environment Agency, 1997; UNESCO, Thesalonici, 1997; Arjen, Wals & Tore van der Leij, 1997; UNESCO, 1997: 19 spec. ses. General Assembly; IUCN-The World Conservation Union, CEC Strategy & Work Plan, 1997-1999; Murdoch,1998; Hungarian Society for Environmental Education, 2000; Commonwealth of Australia, 2000; Teton Science School and Ohio State University, 2000; McVittie & Chamberlain, 2000; Guidelines for Excellence in nonformal EE program development and implementation, 2002; Institute for Global Environmental Strategies- IGES, 2002; United Nations, 2002; Karen, 2002; NE & EP, NEE & TF, 2002; The National Environmental Management Authority-NEMA, 2002; Kentucky legislation KRS 157.900 - 157.915; National Project for Excellence in Environmental Education IEEP; Australian Government, Department of the Environment and Heritage, 2004; Defining Environmental Education, a unit in the EE Toolbox, US EPA NAAEE Publications etc).
Based on the conducted qualitative and quantitative analysis of these documents, Srbinovski (2004) defined the term EE in the following way:

Environmental education is a developing process of active learning in which individuals and groups acquire the necessary knowledge, understanding, attitudes and skills for a determined, motivated, responsible, and above all, joined action towards obtaining and maintaining a dynamic balance in the environment (Srbinovski, 2004).

Even though scientific studies are partially focused on examining students' level of knowledge, that doesn't per se mean having environmental culture and consciousness. This initializes the need for a different treatment of all the components of a student's persona. What we want to emphasise here is increasing the level of ecological and environmental awareness, building environmentally friendly habits and behaviour, as well as taking environmental culture on a higher level. Environmental orientation is determined by the level at which the student accepts the values of the environment and the values of the student's persona as a subject of environmental protection (Kundacina, 1991). Environmental education and orientation in the Republic of Macedonia was studied by: Abazi et al. (2009), Srbinovski (1997, 2001, 2004a, 2004b, 2005a, 2005b, 2006, 2008, 2013 etc.) Srbinovski et al. (2009, 2007, 2010, 2011, 2013, 2014 etc.), Ismaili at al. (2009, 2014), Jonuzi (2009, 2012), Kundacina (1991) etc.

2. Research Methodology

The aim of the study is to determine the presence of the value -components of environmental particularity- among secondary school students in Republic of Macedonia. In that direction, the study can be connected with evaluation in the field of environmental protection. We can assume that most students have a positive attitude towards environmental values. Starting from the aims and goals of the study and in order to check the working hypothesis, we decided to use an instrument called Scale of environmental value orientations. We define environmental orientation as a degree to which the student accepts environmental values and the values of the

student's persona as a subject of environmental protection (Kundacina, 1991). According to Hoxic, (1978) value orientation is defined as "a set of basic criteria (principles) that organize and direct the aspirations and needs of individuals or groups". It's a factor which defines a person's relationship towards environment protection. By its very nature, this orientation has an aesthetic, hygienic and cultural character. In order to determine environmental orientation, the examinees were offered several statements concerning environmental values. The scale of values is of the Likert type (Likert, 1932). This scale examines one statement in two dimensions-continuity and intensity of the given attitude. In order to obtain minimal conditions for comparing our results with those obtained from previous studies; we decided to apply the same instrument which was also applied in previous studies (Srbinovski, 2001). The examinees were offered 13 statements. These statements included several environmental parameters: utilization of natural resources, interconnection of components in the biosphere, consequences of the environment pollution, anthropogenic influence, the role of the environmental consciousness for the survival of the Earth, characteristics of nature, environmental balance, etc. In the course of instrument preparation, we conducted a pretesting of 120 students from several secondary schools in order to get clearly determined and defined statements. The examinees were supposed to state the intensity of their agreement or disagreement on the five-component bipolar scale (I completely agree, I partially agree, I cannot make up my mind, I partially disagree and I completely disagree). The instrument consists of 13 statements. The metric properties of the scale of values are given in Table 1.

Table 1. Metric characteristics of the Scale of Values (Srbinovski, 2001).

Valid N	919	Minimum	16.000	Variance	97.374
Mean	48.625	Maximum	65.000	Skewness	-0.617
Confid-95%	47.986	Lower quar.	42.000	Std.Er.Skew	0.081
Confid+95%	49.263	Upper quar.	57.000	Kurtosis	-0.030
Median	50.000	Std,Dev.	9.868	Std.Er.Kurt.	0.161
Sum	44686	Std. Error	0.326	Missing Cases	84.000

We can notice that the distribution of answers is insignificantly platykurtic (kurtosis = -0.030), and significantly negatively asymmetric because higher results prevail (Skewness = -0.617). We included a representative sample of examinees in the study, i.e. 484 examinees from 19 secondary schools from 18 residential areas in Macedonia. For a reliable comparison of results, we included a number of students by schools equal to that from the previously studied period (Table 2).

Since the results of previous studies of some authors (for example Srbinovski, 2005, Srbinovski et al., 2009, 2012 etc., Jonuzi, 2012 etc.) have shown that grammar school curriculums include the highest number of ecological issues, we decided that it would be best to include students from that educational profile.

Table 2. Number of included secondary school students.

	School	City	Students
1	"Mirce Acev"	Prilep	24
2	"M. M. Brico"	M. Kamenica	32
3	"Rade J. Korcagin"	Skopje	31
4	"Kiril Pejcinovic"	Tetovo	18
5	"Kosta Susinov"	Radovis	33
6	"M.M.Brico"	Delcevo	28
7	"Pance Poposki"	Gostivar	30
8	"Ljupco Santov"	Kocani	21
9	"Niko Nestor"	Struga	20
10	"Jane Sandanski"	Strumica	21
11	"Goce Delcev "	Kumanovo	27
12	"Josif Josifoski"	Gevgelija	24
13	"Sv. Naum Ohridski"	M. Brod	21
14	"Sv. Kliment Ohridski"	Ohrid	26
15	"Zefljus Marku"	Skopje	30
16	"Sv. Kiril i Metodij"	Negotino	16
17	"Dobri Daskalov"	Kavadarci	21
18	"Koco Racin"	Veles	32
19	"Josip Broz"	Bitola	29
	Total		**484**

The following table shows the gender structure of the students.

Table 3. Gender structure of students.

Ordinal No.	Gender	N	%
1.	Male	191	39.46
2.	Female	293	60.54
	Total	484	100.00

We can see that there is a higher number of female students. The inadequate gender representation is probably the result of the random gender structure in the classes we included in the study. Nevertheless, it has no significant effect on the aims and the goals of the study.

Table 4 shows the structure of students by grades.

Table 4. Students' grades.

Grades	N	%
Excellent (A)	174	35.95
Very Good (B)	198	40.91
Good (C)	97	20.04
Sufficient (D)	15	3.99
Total	484	100.00

We can notice that students with excellent and very good grades prevail. The average grade of students is 4.1 (very good-B) and it is lower compared to the average grade of students in the previous study. We can qualify the sample of examinees in this study as intentional and systematic. It is intentional because we chose students from higher classes, and it is systematic because we chose every n-class. Since many random moments influence the distribution of students into classes, we can conclude that this is a random and sufficiently representative sample. The number of students in the classes ranges from 16 to 33.

3. Results and Discussion

One of the most important tasks of education is raising environmental awareness and culture among students. Environmental culture encompasses the following components: cognitive, affective, valued and emotional component. Students' values orientation is defined by the level of determination of the need for a healthy environment as a basis on which the students' readiness for action can be built. We determine students' environmental orientation based on the verbal statements of the examinees in connection with certain environmental values.

Table 5. Students' attitudes towards environmental values

STATEMENT	A	B	C	D	E	F*
1. Progress of society can be reflected by how much people utilize nature	108	68	42	96	170	**2.69**
	22.31	14.05	8.68	19.83	35.12	
2. People's survival is conditioned by the survival of other organisms	91	88	62	103	140	**3.23**
	18.80	18.18	12.81	21.28	28.93	
3. By protecting nature, we protect ourselves and future generations	18	39	0	168	359	**4.26**
	3.72	8.06	0	34.71	53.51	
4. People destroy nature to the extent to which it can regenerate itself	69	81	18	193	123	**2.55**
	14.26	16.74	3.72	39.88	25.14	

5. Everything in people's power should be done when it comes to environment protection	68	85	28	167	136	**3.45**
	14.05	17.56	5.79	34.5	28.1	
6. The only way to survive on Earth is ecological awareness	85	38	0	118	243	**2.18**
	17.56	7.85	0	24.38	50.21	
7. Nature is our treasure and it should be everyone's concern	0	0	0	192	292	**4.60**
	0	0	0	39.67	60.33	
8. Nature is inexhaustible and indestructible	101	138	16	69	160	**2.90**
	20.87	28.51	3.31	14.26	33.06	
9. Despite the technological progress of this millennium, people continue to depend on plants	18	31	29	181	225	**4.17**
	3.72	6.40	5.99	37.40	46.49	
10. Material wealth has no practical value if we live in an endangered environment	72	93	35	109	175	**3.46**
	14.88	19.21	7.23	22.52	36.16	
11. Only people have the privilege to treat nature as they like	228	135	0	63	58	**3.85**
	47.11	27.89	0	13.02	11.98	
12. People are the most responsible factor for environment protection	30	61	0	153	241	**4.07**
	6.20	12.6	0	31.40	49.79	
13. Many things in people's lives are more important than environmental issues	187	94 19.42	38 7.85	69	96 19.83	**3.43**
	38.64			14.26		

Key: A- strongly disagree, B- disagree, C- neither agree or disagree, D- agree, E – strongly agree, F- arithmetic mean
*The scale was scored as: strongly agree -5, agree -4, neither agree or disagree -3, disagree- 2 and strongly disagree-1

The percentage frequency and the arithmetic mean of every statement are presented in the table. The arithmetic mean shows the average level of agreement with the offered statement.

Looking at the arithmetic mean, we can see that the examinees have a positive environmental determination. Examinees have average 5 points for only one statement: "Nature is our treasure and it should be everyone's concern". A relatively large number of examinees partially or completely agree with the statement "By protecting nature, we protect ourselves and future generations" (arithmetic mean 4.26). This shows that examinees highly value the balance in the environment, which is a precondition for the survival of all living things, including humans. Most of the students consider people/humans to be the most responsible factor for environment protection, and this can be noticed from the arithmetic mean of the statement "People are the most responsible factor for environment protection" which is 4.07. There was a high arithmetic mean for the statement "Despite the technological progress of this millennium people continue to depend on plants" (4.17).

A very small part of the students partially or completely agree with the statement "The only way to survive on Earth is ecological awareness". This proves that young people are aware of the fact that this planet's survival is conditioned by several factors which, more or less, enter the field of environmental science. There was a relatively low arithmetic mean for the following statements: "People destroy the environment to the extent to which it can regenerate itself", "Progress of society can be reflected by how much people utilize nature" and "Nature is inexhaustible and indestructible".

The obtained results correspond to Likert's assumptions according to which the individual whose attitude towards the measured phenomenon is positive, will respond positively to most statements; the ambivalent individual will respond positively to some statements and negatively to others, and the individual whose attitude is negative, will respond to most statements negatively (Lazaroski, 1980).

Based on the arithmetic means for the used statements, we can conclude that most of the examinees had a positive attitude towards the important environmental values. The average mark of environmental evaluation is 3.45, which is about 69% of the maximum number of points.

Kundacina M. (1991) and Srbinovski M. (1996a, b) had better results on a sample of 279 students. Srbinovski (1997) studied the valued environmental component of students included in the Experimental Education Project

PEKSNAS in the “Rade Jovcevski Korcagin” from Skopje and concluded that about 48% of the examinees have a positive environmental orientation.
The valued environmental component of secondary school students in Zagreb was studied by Radanov (1978). The results from his study show that the way examinees see environment depends on the profile.
The dynamics of this component among students over a longer period is given in the following figure.

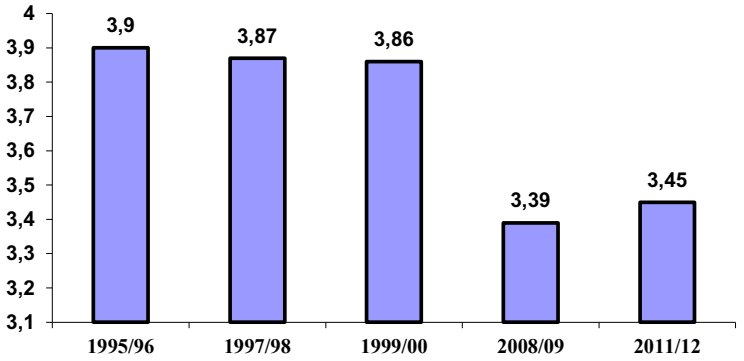

Fig.1. Students’ environmental worldview (1995-212).

We can see from the chart that there is a fall in the value of this component compared with the previous period. The reason for this fall lies among the number of factors in the school as well as the factors in the wider social surrounding. The average mark of students’ attitudes towards the environment is 3.45, which is about 69% of the maximum number of points.

We can prevent environment endangerment with a proper environmental education of all inhabitants on the planet Earth from a very young age. Environmental education allows students to develop a sense of respect of nature and the social environment. This tasks calls for involvement of all factors that influence today’s schools.

4. Conclusion

The average mark of students’ attitudes towards the environment is 3.45, which is about 69% of the maximum number of points. There has been a slight fall of the value of this component.

The following key question emerges: which are the suggested recommendations for a clear vision of the future environmental development from the aspect of the educational system in the Republic of Macedonia? The improvement of the quality of the environment through the prism of education should include the following elements: improving working conditions in schools; motivating teachers and other staff members; respecting the experience, needs, possibilities and motives of the participants in environmental education (EE); determining the most adequate model of EE for every level of education; overcoming the concept by which environment equals nature; creating favourable ecological atmosphere in schools; covering EE contents through generally acceptable didactic aspects: problem solution, application, cooperative orientation, completeness and self-organization; treating environment as a dynamic system of ecological, socio-economical and cultural ties in an evolving process; accepting the importance of all the elements included in the process of learning (empirical, synoptic, aesthetic and ethical) in the development of the relation between the three “threads” of EE ("about", "for" and "in") and the dimensions of learning (knowledge and understanding, attitudes and skills); implementing the ecological approach as a criterion for developing the curriculum, the programmes and the didactic material; developing standards and criteria for EE and providing the opportunity for preparing specializations as well as master and doctoral theses in the field of EE at faculties/universities which train teaching staffs (Srbinovski, 2005a).

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